

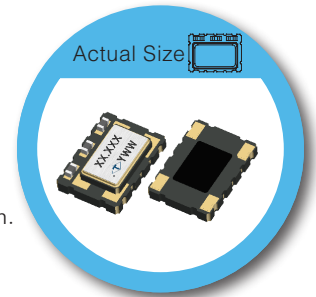
# TT Type High Precision 7.0 x 5.0 mm SMD Voltage Controlled Temperature Compensated Crystal Oscillator

## FEATURE

- Typical 7.0 x 5.0 x 1.9 mm ceramic SMD package.
- High Precision for -40°C ~ +85°C, ±0.28ppm , -40°C ~ +105°C , ±2ppm.
- CMOS and Clipped Sine wave (without DC-cut capacitor) output optional.

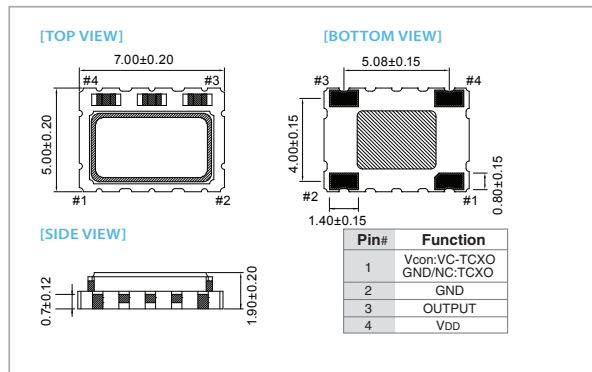
## TYPICAL APPLICATION

- Femtocell , Base Stations
- WLAN/WiMAX/WIFI, Wireless Communications

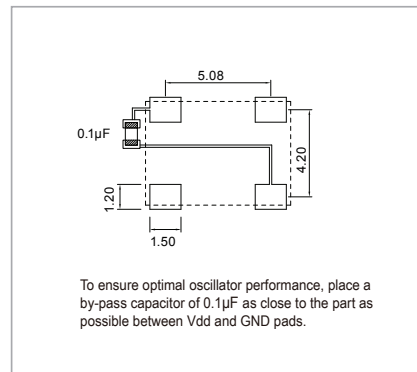


RoHS Compliant

## DIMENSION (mm)



## SOLDER PAD LAYOUT (mm)



## ELECTRICAL SPECIFICATION

Parameter	2.5V		3.3V		Unit
	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD)	VDD-5%	VDD+5%	VDD-5%	VDD+5%	V
Frequency Range	5	52	5	52	MHz
Standard Frequency	10, 12.8, 16.384, 19.2, 19.44, 20, 25, 26				
Frequency Tolerance*	-	±2.0	-	±2.0	ppm
Frequency Stability					ppm
Vs Supply Voltage (±5%) change	-	±0.1	-	±0.05	
Vs Load (±10%) change	-	±0.05	-	±0.05	
Vs Aging (@ 1st year)	-	±1.0	-	±1.0	ppm / year
Supply Current (CMOS output)	-	8	-	8	mA
Supply Current (Clipped Sine Wave)	-	5	-	5	
Output Level (CMOS)	90%VDD	-	90%VDD	-	V
Output Level (Clipped Sine Wave)	-	10%VDD	-	10%VDD	
Output Level (CMOS) Output High (Logic "1")	45	55	45	55	%
Output Level (CMOS) Output Low (Logic "0")	0.8	-	0.8	-	Vp-p
Output Level (Clipped Sine Wave)	15pF		15pF		
Load (CMOS)	10 KΩ // 10pF		10 KΩ // 10pF		
Load (Clipped Sine Wave)	15pF		15pF		
Control Voltage Range (VCTCXO)	0.5	2.5	0.5	2.5	V
Pulling Range (VCTCXO)	±5.0	-	±5.0	-	ppm
Vc Input Impedance (VCTCXO)	100	-	100	-	kΩ
Phase Noise @ 10 MHz	100 Hz	-130			dBc/Hz
	1 kHz	-145			
	10 kHz	-154			
Start time	-	5	-	5	mSec
Storage Temp. Range	-55	125	-55	125	°C

Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position.

\* Frequency at 25°C, 1 hour after reflow.

## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm						
	±0.05	±0.1	±0.14	±0.2	±0.28	±0.5	±2
-10 ~ +70	○	○	○	○	○	○	○
-20 ~ +70	×	○	○	○	○	○	○
-40 ~ +85	×	×	×	△	○	○	○
-40 ~ +95	×	×	×	×	×	△	○
-40 ~ +105	×	×	×	×	×	×	○

\* ○: Available △: Conditional X: Not available

**Note: not all combination of options are available. Other specifications may be available upon request.**